

## Tennessee Pollution Prevention Partnership Success Story



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## Leadership in Energy and Environmental Design (LEED) Buildings

### The Member

The Oak Ridge National Laboratory is a multipurpose research and development facility located near Oak Ridge, Tennessee. Managed by UT-Battelle, L.L.C. for the Department of Energy, ORNL plays a vital role in the quest to solve problems of national importance such as nuclear waste management, national security, and availability of clean energy resources.

### The Story

The ORNL Campus is a sprawling complex with many buildings constructed in the early 1940s that are nearing the end of their useful lives. In 2003, ORNL began an initiative to consolidate staff into fewer, more modern facilities that incorporate energy efficient environmentally friendly design concepts embodied by the U.S. Green Building Coalition Leadership in Energy and Environmental Design (LEED) criteria. Since 2003, ORNL has completed construction of six LEED certified facilities to provide nearly 600,000 square feet of modern research and administrative space. Two facilities, the 51,000 square foot Research Support Center (RSC) and a 218,000 square foot Multiprogram Research Facility (MRF) were completed within the past two years. The RSC and MRF facilities feature sustainable and energy-saving measures such as low-flow faucets and fixtures, reflective roofing, high-performance glazing, high-efficiency lighting, occupancy sensors, direct digital controls, energy efficient motors, high-efficiency chillers, variable air volume systems, and a well-insulated, airtight building envelope. The building size, shape, architecture, exterior finish, and landscaping designs blend with the surrounding community, and the landscaping and roof designs reduce the urban heat-island effect of the buildings. In addition to considerations of cost and aesthetic value, materials selections were made based on recycled content, low emissions of volatile organic compounds, insulation value, and durability. The entire 6-building complex of LEED facilities at ORNL is built utilizing a former brown-field site, which includes rainwater-fed landscaping with native vegetation.

### The Success

The RSC was awarded LEED certification in 2005, and the MRF was completed and awarded LEED Gold certification in December 2006. In 2006, the RSC facility used 78% less energy saving over 3.955 million kwh and approximately \$181,000 in energy and fuel costs compared to the average ORNL office-lab building. Data on the newer MRF facility is projected to use 23% less energy than a comparable code-compliant laboratory facility. In addition to energy savings, construction debris was recycled, including about 80 tons of gypsum board used for fertilizer, more than 2600 pounds of scrap steel and 450 cubic feet of cardboard recycled, grinding scrap wood into mulch and reusing ferrous metals and concrete.



View of the ORNL RSC (front) and MRF (upper right).

### The Pollution Prevented

The ORNL Research Support Center and Multiprogram Research Facility save approximately 5.121 million kwh per year and approximately \$234,000 in annual energy and fuel costs compared to the average office-laboratory building at ORNL. These two buildings helped reduce the energy use intensity of ORNL laboratory and office spaces by more than 21 kBtu per square foot in 2006 compared to 2005 for a total (campus-wide) annual power savings of more than 30 Billion BTU (8,790,000 kwh). In addition, this project diverted nearly 7000 tons of construction debris from landfills through recycling and reuse initiatives.

August 2007